

forming a polysilicon structure on [a layer] **an emitter region position** of the transistor, the polysilicon structure including a doped diffusion barrier layer on the [layer] **emitter region position** and a polysilicon layer on the diffusion barrier layer; depositing metal including at least one of aluminum, gold, and silver on the polysilicon layer; and heating at least the deposited metal and the polysilicon structure to urge diffusion of the deposited metal into the polysilicon layer, **with the doped diffusion barrier layer inhibiting diffusion of the deposited metal into the emitter region position of the transistor.**

20. (Amended) A method of making a metal contact for a bipolar transistor, the method comprising:

forming a conductive diffusion barrier over an emitter region position of the transistor;
forming a polysilicon structure [on a layer of the transistor] **on the conductive diffusion barrier;** and substituting metal for at least a portion of the polysilicon structure **to form a metal contact having a lower-most surface overlying the emitter region position of the transistor.**

23. (Amended) A method of making a bipolar transistor having self-aligned base contacts and self-aligned metal emitter contact, the method comprising:

forming first and second polysilicon base contacts on a semiconductive layer, the contacts spaced apart to define an active region in the semiconductive layer; outdiffusing dopant from the first and second base contacts into the semiconductive layer to form extrinsic base regions aligned with the base contacts; implanting an intrinsic base region in the active region; forming a doped diffusion barrier layer on the intrinsic base region; forming a doped polysilicon [structure on the intrinsic base region] **layer on the doped diffusion barrier layer;**

forming an emitter region self-aligned with the doped [polysilicon structure] **diffusion barrier layer** by outdiffusing dopant from the doped [polysilicon structure] **diffusion barrier layer** into the intrinsic base region; and substituting metal for at least a portion of the polysilicon [structure] **layer** after forming the emitter region, thereby forming a metal emitter contact self-aligned with the emitter region.

24. (Amended) The method of claim 23:

[wherein the polysilicon structure includes:

a doped diffusion barrier layer on the intrinsic base region; and
a polysilicon layer on the doped diffusion barrier layer; and]

wherein substituting metal for at least a portion of the polysilicon structure includes substituting metal for substantially all of the polysilicon layer.

28. (Amended) A method of reducing emitter resistance of a bipolar transistor, the method comprising:

forming a bipolar transistor structure having a polysilicon emitter contact **electrically coupled to an emitter region of the transistor structure**;
substituting metal for at least a portion of the polysilicon emitter contact **without shorting the emitter region of the transistor**.

Please add new claims 32-39 as follows:

32. (New) A method of making a bipolar transistor having self-aligned base contacts and self-aligned metal emitter contact, the method comprising:

forming first and second polysilicon base contacts on a semiconductive layer, the contacts spaced apart to define an active region in the semiconductive layer;
outdiffusing dopant from the first and second base contacts into the semiconductive layer to form extrinsic base regions aligned with the base contacts;
implanting an intrinsic base region in the active region;
forming a doped polysilicon structure on the intrinsic base region, wherein the polysilicon

structure includes:

a doped diffusion barrier layer on the intrinsic base region; and

a polysilicon layer on the doped diffusion barrier layer; and

forming an emitter region self-aligned with the doped polysilicon structure by outdiffusing dopant from the doped polysilicon structure into the intrinsic base region; and

substituting metal for substantially all of the polysilicon layer after forming the emitter region, thereby forming a metal emitter contact self-aligned with the emitter region.

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33. (New) A method of making a metal emitter contact for an emitter region position of a bipolar transistor, the method comprising:

forming a diffusion barrier layer over the emitter region position of a semiconductive substrate;

forming a polysilicon layer on the diffusion barrier layer and over the emitter region position; and

substituting metal for at least a portion of the polysilicon layer to produce the metal emitter contact, the metal emitter contact electrically coupled to the emitter region through the diffusion barrier layer.

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34. (New) The method of claim 33 wherein the diffusion barrier layer includes a dopant, and the method further comprises outdiffusing at least a portion of the dopant into the emitter region position.

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35. (New) A method of making an emitter contact for an emitter region position of a bipolar transistor, the method comprising:

forming a polysilicon structure over an emitter region position of a semiconductive substrate, the substrate having a surface at the emitter region position; and

substituting metal for at least a portion of the polysilicon structure to produce a metal emitter contact have a surface confronting the surface of the substrate.